USAID/BOSNIA & HERZEGOVINA

WATER AND WASTEWATER SECTOR

PLAN FOR INSTITUTIONAL STRENGTHENING

TEN SELECTED PILOT VODOVODS

FINAL REPORT

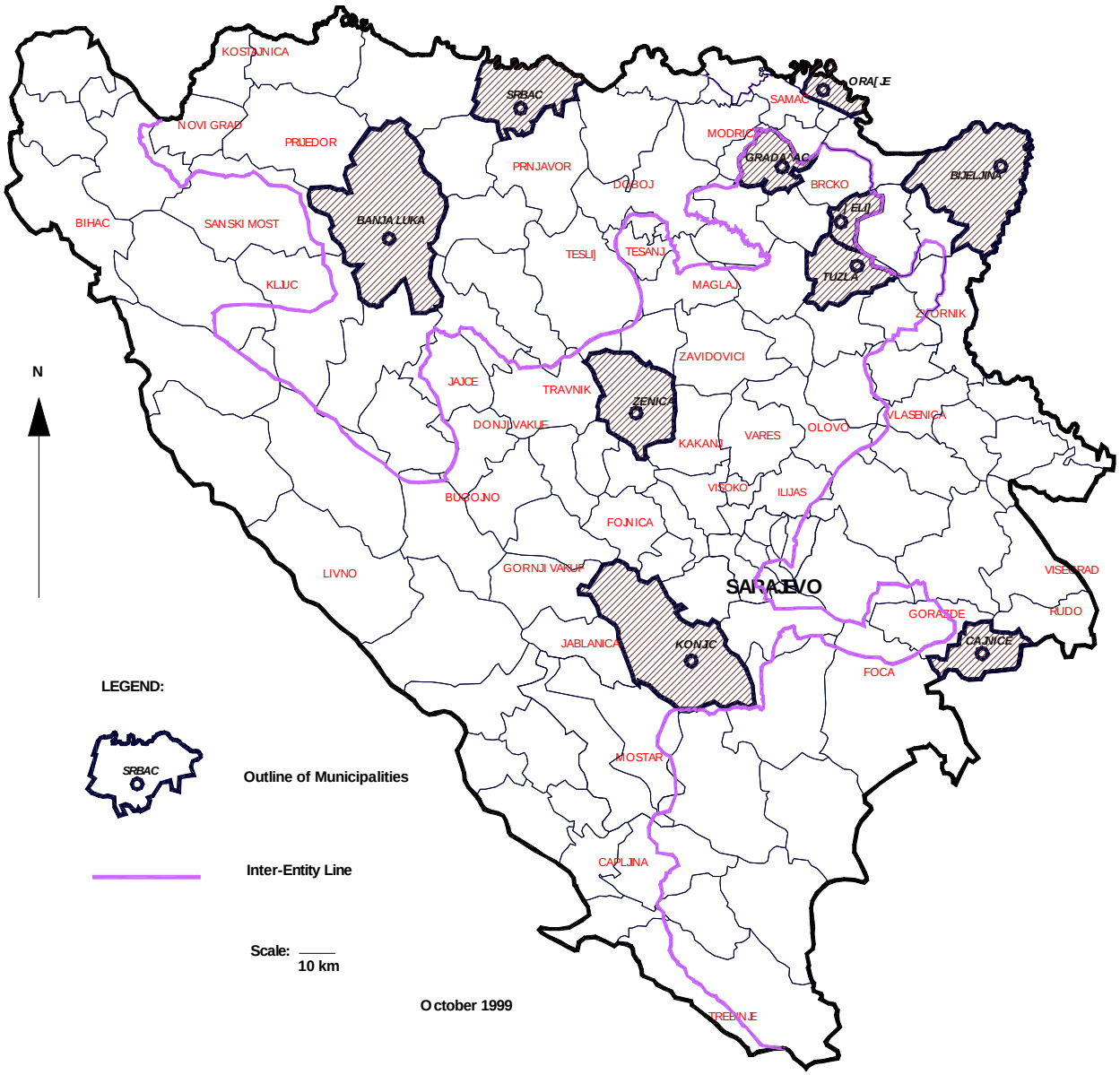
6 OCTOBER 1999

The Ten Pilot Vodovods

· **Konjic**	· **Zenica**	· **Srbac**	· **Gradacac**	· **Bijeljina**
· **Cajnice**	· **Banja Luka**	· **Tuzla**	· **Orasje**	· **Celic**

Camp Dresser & McKee International (USA)
Hydro-Engineering Institute Sarajevo (B&H)

PLAN FOR INSTITUTIONAL STRENGTHENING



Bosnia and Herzegovina
LOCATION OF TEN SELECTED PILOT VODOVODS

SUMMARY

I. BACKGROUND

Improvement of water supply and wastewater services was identified as a major priority among the programs selected as components for reconstruction of Bosnia and Herzegovina after the war. An ongoing program is being undertaken to assess the needs for reform of the sector at the national level. The objective of this program is to assess the situation at the local level. Ten vodovods throughout the country were selected by USAID to participate in a pilot program for strengthening the capability of these vodovods to provide satisfactory water and wastewater services to their customers in a business-like manner, that is, to become efficient and financially self-sustaining. Field visits were made to all ten vodovods, and physical, institutional and financial data were collected.

II. NATIONAL SECTOR REFORM

Reforms are being evaluated in both the Federation and in Republika Srpska, the two Entities of the country. The logic and need for reform is so great that it appears inevitable. However, the process is expected to be time consuming, and not likely to result in the changes needed to provide vodovods with the greater autonomy they will need to develop into the type of utility envisioned in the goals of this program.

III. EXISTING CONDITIONS

Administrative Organizations From the point of view of the vodovods, the municipalities (which are essentially districts) are the most important subdivision of the country. There are a total of about 134 municipalities, and each has a vodovod, or water and wastewater company. The vodovods are owned and firmly controlled by the municipalities.

Population and Persons Served The population of the country is about four million. Population estimates at all levels are unreliable because of the significant disruptions caused by the war. The total population of all ten municipalities in which the pilot vodovods are located is about 850,000. The vodovods serve an estimated 500,000 (59%) of this population with water and about 300,000 (35%) with wastewater services.

Sources of Water Eight of the vodovods use springs or wells for their major source of supply, and three use rapid sand filtration plants to treat all or part of their water sources. Most vodovods have an adequate supply of water, but there are deficiencies in three of the vodovods studied.

Water Quality and Testing Water quality is suspect, and in some cases it is clearly unsatisfactory. Cross contamination is a threat because of aging pipelines, occasionally marginal chlorination, and the lack of water under pressure 24 hours per day in at least three of the vodovods. Water quality testing is unfocused, unregulated and of doubtful reliability.

Water Metering Only half the vodovods have some metering on their sources of supply. Eight vodovods meter most of their customers' connections but only three reported that over three fourths of these meters were operable. Two vodovods reported that less than half their installed meters were operable, while the remaining five had few operable meters.

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Water Consumption and Unaccounted-for-Water (UFW) The three systems that had reasonably effective metering of sources and customers reported average per capita water use of from 175 to 280 lpcd (with an average of about 215 lpcd), and UFW rates of from 41% to 54%. For the eight vodovods for which some estimate of the amounts of water produced were available, per capita production ranged from about 250 to 470 lpcd. Another consultant conducted a study of water use in Zenica for several days by 136 customers in single family dwellings and apartment buildings. Actual water consumption was similar for both types, and was about 200 lpcd. This is similar to the average of 215 lpcd noted above.

Wastewater Collection and Treatment Sewers are generally old and in poor condition, and few vodovods have the equipment needed to clear blockages. Three vodovods have combined sewers (that collect runoff rainwater as well as wastewater) and two reported they have no sewers. None of the vodovods provide treatment for the wastewater they collect. One has a relatively new treatment plant but it has been closed for about nine months because the municipality ordered it to be shut down to save on energy costs.

IV. INSTITUTIONAL ASSESSMENT

Organizational Structure for Provision of Water and Wastewater Services Five of the vodovods are "true"vodovods, companies with responsibilities for providing only water and wastewater services. Another also was responsible for solid wastes. The remaining four were communal services companies, providing responsibility for such services as solid wastes, street cleaning, public heating, maintaining public buildings, tending parks and cemeteries, and other services.

Relationships with Municipalities and Limits on Autonomy All vodovods in the study report to a municipally appointed and controlled board of directors, and the vodovod managing directors are appointed by the municipality. Among the several potential and actual problems resulting from this lack of autonomy are: (1) qualifications of the vodovod managing directors may be secondary to political considerations, (2) the financial viability of the vodovods is secondary to political interests, and (3) municipal officials sometimes interfere directly in the vodovods' operations.

Internal Organization, Management and Administration Most vodovods would benefit from a more logical form of internal organization. Management capabilities were difficult to assess because the lack of autonomy and the deficiencies discussed below adversely affect the entire process of management. Administrative and management capacity is also impacted by poor organization of department functions, unclear identification of duties and responsibilities, inadequate data-gathering and reporting systems, and by a serious lack of office equipment and supplies.

Planning, Studies and Mapping There is little evidence of master plans or feasibility studies. Such studies as were available appeared to be mostly capital investment plans unsupported by financial studies, with little regard for priorities or staging. Mapping capabilities were poor in most vodovods, and often they had only a large, single, out-of-date map on which some of the system facilities were noted.

Operation and Maintenance Procedures Few facilities had operation and maintenance manuals to guide the operators, but most systems are relatively simple, so this inadequacy is not overly serious. In general, supervising managers and operators seemed to be performing their operating functions acceptably. Preventive maintenance is generally lacking, and keeping up with the need for repairs is difficult under the financial constraints that exist in all vodovods.

Personnel The vodovods may be somewhat overstaffed, but not seriously. Little formal training is provided. Human resource development (HRD) functions such as periodic evaluations, goal-setting, incentives, training or other HRD functions are not practiced to any significant extent in most vodovods.

Availability of Information and Reporting There is considerable room for improvement in the data gathering and reporting process, as evidenced by the difficulties in obtaining basic information from most officers interviewed. Except for limited use in the financial departments, there was no evidence of computer-based data collection and reporting.

Customer Relations Almost universally, the vodovods' programs for dealing with customers is aimed at reacting to complaints, mostly regarding bills. A few vodovods had outreach programs, such as inserting information booklets in the bills or offering to help customers reduce leakage in their homes, but most offered nothing relative to positive programs for improving utility-customer relationships.

V. FINANCIAL ASSESSMENT

Broad-Based Problems Financial assessment was complicated by the use of several different currencies (Bosnian convertible marks, German Deutsche marks, Croat kunars or Yugoslavian dinars). Other problems were the two separate accounting systems in the Federation and Republika Srpska, and the confusion or lack of clarity of some of the account categories. In one vodovod, for example, "calculated non-material" expenses amounted to 15% of the vodovod's total expenses, and "non-calculated non-material" expenses amounted to another 13%.

Financial Policies and Audits While most vodovods have financial policies, they are often opaque and subject to abuse. There appears to be no comprehensive, independent audits of their books or financial reports. Reviews by the "Financial Police" appear to be limited only to revenues collected.

Accounting Practices As noted, each Entity has its own accounting system, each of which is uniform for all public companies, but they are not designed specifically for water and wastewater utilities. This means that the vodovods are unable to record and report on their financial activities to the extent normally required for autonomous water and wastewater utilities.

The Role of Barter Bartering goods and services in lieu of cash as payment for bills was common in all vodovods. This practice serves a purpose where cash is limited, as receiving something tangible from customers is preferable to receiving no payment. However, there is no consistency in how such transactions are described, valued and entered into the books. This leads to potential abuse by accepting goods and services for personal purposes.

Financial Systems and Records Where vodovods provided other communal services, revenues and costs were not separately identified for water and wastewater services. In the case of the true vodovods, costs and revenues for water and wastewater services were also combined. Several vodovods were identified as having computer systems sufficiently old that they face serious Year 2000 problems. Only one vodovod had a reasonably adequate management information system. Most financial departments lacked the basic software required for financial analysis, including spreadsheet applications, word processing or data base applications. Only the largest five vodovods prepared budgets for fiscal year 1999.

Tariffs The vodovods use widely diverse tariff structures. Customer charges vary based on size of meter or type of service. Most charge a fixed rate per cubic meter regardless of the amount of water used, but that amount usually varied by type of customer. Industrial users are charged from 1.5 to almost 6 times as much per cubic meter as residential customers. Some charge a flat rate and some charge a rate based on the estimated number of customers per connection. Where there were no functioning meters, vodovods usually charge on the basis of an estimated rate of per capita consumption and number of persons served. To minimize complaints, estimated water usage is often set at levels well below probable usage. Based on an estimated water usage of 200 lpcd and four persons per family, monthly family bills for water and wastewater services in the ten vodovods range from KM 6 to 30 ($3.50 to $17), with a median of KM 10.7 ($6) per month.

Meter Reading, Billing and Collections All vodovods read meters and send bills monthly to commercial and industrial customers. Residential customers, however, are billed only quarterly, sometimes semi-annually, and in one case, annually. Typically, meter readers also prepare bills and deliver them to customers at the time the meters are read. Bills usually only include the current amount due, but do not show the level of past unpaid bills due. The major problem cited by all vodovods was the failure to collect a satisfactory percentage of the amounts they billed customers. The average collection rate for all ten was 40%, and it ranged from 10% to the 82% achieved by Banja Luka, which aggressively pursues non-paying customers in the courts. The largest amount of the accounts receivable for almost all vodovods was attributed to the public sector customers: the military, hospitals, schools and other public buildings. Neither the municipalities nor any other Governmental agency is helpful in solving that problem.

Vodovod Expenses The terminology used in the vodovods' accounting systems relative to expenses is not always sufficiently descriptive to clearly identify all cost categories, and several use different categories of expenses. Nevertheless, some rough comparisons of expenses were made. On average, the vodovods major expense categories were personnel (29% of total costs), depreciation (26%), electricity (11%), materials (10%) and "miscellaneous" (16%, but made of many smaller cost items). Unfortunately, only 3.5% was spent on average for maintenance and repairs. However, individual expenditures varied widely. For example, electricity costs ranged from only 2% (systems with gravity water sources) to 24% (systems with extensive pumping). A major new expense for vodovods is the taxes charged them by their Entity governments. For vodovods in the Federation, they are subject to three taxes, essentially a water pollution (or "protection") tax (KM 2 per person), a water source "extraction" tax (0.1 KM per m3), and, in the Federation, a general tax calculated at 10% of the amount they bill their customers. In Republika Srpska, they charge only protection and extraction taxes, at a rate of KM 0.01 per m3 each. These taxes were initiated at the start of 1999.

Vodovods Financial Condition Even if the ten vodovods studied had collected all the amounts billed, six of the vodovods would still be reporting losses, while the remainder were in essentially a break-even situation. The fact that, on average, they collected only 40% of the amounts billed last year, means all vodovods are in very poor financial condition. The five basic financial indicators listed below were used in the study to determine their financial condition:

- Cash Flow None of the vodovods had sufficient cash flow to support routine operating activities or to conduct maintenance at the level required.

- Accounts Receivable Banja Luka was the only vodovod with an acceptable level of collection of their accounts receivable.

- Liquidity Zenica was the only vodovod with sufficient liquidity to remain solvent after meeting all short-term debt obligations.

- Profitability None of the vodovods are profitable, and most are seriously in debt.

- Accounts Payable Banja Luka, Zenica and Bijeljina have accounts payable averaging less than 35 day. All the others exceed that period, and several exceed it significantly.

VI. Private Sector Participation

Government and Donor Views on Private Sector Participation The Government has indicated a strong interest in pursuing privatization of the sector. As a matter of policy, USAID, the World Bank and many other donors strongly support the concept of private sector participation as a viable and often preferred means of improving the quality of water and wastewater services.

Current Experience in the Country Five of the ten vodovods make use of the private sector in meeting some of their responsibilities. Zenica has contracted for the provision of its meter replacement needs, the maintenance of its accounting system and the development of an information system. Banja Luka uses private legal services to take its non-paying customers to court. Tuzla used outside expertise to develop a computerized system monitoring program, and outsources its construction repair work. Konjic subcontracts the maintenance of its computers used for financial purposes. The Municipality of Celic has selected two private firms for the provision of all municipal public services, but that program is not a useful example, given its present problems and small size.

Possibilities for Private Sector Participation in the Country There are several possibilities among the private sector alternatives that might usefully be applied among the ten pilot vodovods, or elsewhere in the country. The most comprehensive is the use of a *management contract*, under which the municipality maintains ownership of the sector assets, but contracts with an experienced company to operate and maintain the entire utility. The World Bank is considering such an option in Mostar, and some of the larger vodovods in the pilot study might be candidates for this type of program. All vodovods should consider the use of *service contracts* with private sector companies for the provision of a wide variety of functions. These would include those functions that the vodovod finds difficult to perform, or functions that the private sector may be able to provide more efficiently and economically. In addition, the Government may wish to consider undertaking a study to determine the economic and other advantages of developing the capacity for the local manufacture of meters, chlorine gas or other sector commodities.

VII. RECOMMENDATIONS

General The report presents recommendations for institutional and financial strengthening separately in Chapters VIII and IX. In each chapter, these recommendations are divided into priority and other recommendations. Finally, broad recommendations for the entire sector, as opposed to individual vodovods, are also presented in Chapter VIII. For convenience, both institutional and financial priority recommendations are combined in this summary.

Priority Recommendations

1. Increase the Autonomy of the Vodovods (First Priority)

Recommendation: Municipalities should grant greater autonomy to vodovods through formal legal agreements between the parties.

Even with supportive efforts by the donor community, it must be recognized that it will be some time before comprehensive national sector reform and the concomitant granting of autonomy to the vodovods can be expected. The provision of greater autonomy to vodovods cannot wait if the proposed strengthening measures are to have the intended effect. It is recommended that, until sector reform is achieved, the donors make it a condition of any future programs of assistance that the subject municipality and vodovod enter into a legal agreement which provides the vodovod with increased autonomy to the extent permitted within existing laws and regulations. It is further recommended that a study be undertaken that would investigate this matter, and develop a suggested form of agreement that could be used for this purpose.

2. Increase the Rate of Revenue Collections (Second Priority)

Recommendation: Undertake a multi-faceted program to ensure that vodovods collect most of the revenues which they bill customers. Elements of the program include:

a. Adoption of an Aggressive Policy of Pursuing Outstanding Bills Like Banja Luka, other vodovods should use the court system aggressively to collect payments from delinquent customers. Initially, a clear collection policy should be established which sets forth the terms and penalties for non-payment, and it must be publicized and adhered to in order to ensure that customers know the vodovod is serious about payment. A specific payment period needs to be adopted and the date due placed on the customer's bill. Previous amounts owed should be presented on current bills so customers can see the total amount they owe. Commercial customers should be given two late payment warnings. The residential customer should be allowed three warnings. Shutoffs or court action should be initiated promptly once the last warning has been ignored.

b. Development and Implementation of a Program to Facilitate Shutoffs As cited in the main report, there is a legal right for vodovods to shut off water to customers who are delinquent in their payments. FBiH Law on Public Utility Services (Article 11, Paragraph 2, Item 3) stipulates that the supplier of services may refuse to deliver services to those users who do not pay their bills for two consecutive months. Before the supplier cuts-off such service it must prove that it does not prejudice the rights of others who are paying regularly for their services. This condition protects the rights of people in apartment buildings who pay for their services from the loss of services in cases where a neighbor has not paid.

c. Development and Implementation of a Strategy to Allow Vodovods to Refuse Service for Non-Payment Without Interference From Municipal Officials Ensure that this right is granted to the vodovods in the agreements with the municipalities recommended above. Develop a strategy to allow the vodovods to make use of these powers, and assist the vodovods in implementing that strategy. This strategy should include the drafting of a new "shutoff policy" which sets forth, within the law, the specific conditions under which the vodovod plans to exercise this power, and measures for the publication and explanation of this policy.

d. Development of a Program to Physically Facilitate Shutoffs Make an inventory of all customer connections to determine either the location or absence of shutoff valves or other means of disconnecting the non-paying user, whether the valves or other means function, and whether the valves or other means of interruption can be protected against unauthorized reconnection by others. The first priority is to determine this information for industries, commercial facilities, public buildings and apartment or multifamily buildings.

e. Implementation of a Program to Facilitate Shutoffs to Major Users Determine how best to implement the construction of any works required to facilitate shutoffs to major users. Estimate the cost of construction of the recommended shutoff facilities.

f. Development of a Strategy for Dealing with Customers in Multi-Family Buildings Develop a strategy for simplifying the matter of billing and collections from multiple customers in buildings with a single meter. Determine the possibility of delivering a single bill to the owner of a multiple family unit with a single meter, or to tenant associations if the apartments are individually owned, rather than individual families in the building. That would shift responsibility for collection to the bills from the vodovod to the owner or association responsible for the building.

g. Development of a Strategy to Pursue the Problem of Non-Payment by Public Customers Develop a strategy to assist the vodovods in collecting the amounts owed by the military and other public customers since the war. The vodovods should write off the outstanding receivables from public customers up through the end of the war, but the Government should honor its debts accumulated after the war, and pay them promptly. The alternative of passing these costs along to other customers is neither feasible nor fair. A government that aggressively pursues the vodovods for taxes imposed has an obligation to pay its own debts.

h. Consider the Reduction of the Length of Time Between Billings Conduct a study to determine the added cost of billing more frequently, the potential benefits, and specific actions required to accomplish meter reading and billings on a more frequent schedule, at minimum additional cost. Currently, all vodovods bill their residential customers on a quarterly, semi-annual or annual basis. They also generally bill commercial and industrial customers on a monthly basis. Increasing the billing frequency for residential customers may improve collections by decreasing the amount of each bill, making it easier to pay when the bill is due. In general, it seems reasonable that those vodovods that now bill their residential customers on a semi-annual or annual basis should consider billing their residential customers on a quarterly basis. Those now billing quarterly should consider monthly or bimonthly billing. To reduce the extra labor entailed in increased billing, the meter reading procedure could be changed to permit reading meters on a cycle basis, or every other bill could be prepared on the basis of estimates rather than actual meter readings.

3. Implement an Effective Metering Program (Third Priority)

Recommendation: Undertake a multi-faceted program to ensure that vodovods develop effective metering programs that include the following:

a. Source Metering It will be expensive to provide meters on presently un-metered sources, so this may need to be achieved over time. However, vodovods should improve their efforts to determine with greater accuracy how much water they are producing. This can be done with temporary measuring devices that can be moved from one location to another. Systems would also have to be developed to ensure that an accurate record of the daily hours of operation (of wells, for example) are maintained and reported to management. A study should be made (by local specialists, with overall guidance from an experienced expatriate) in each vodovod to determine how best to improve source measurement, and the recommendations of these studies could be provided to donors for their consideration.

b. Metering of Large-User Customer Consumption Vodovods should ensure that the provision of reliable meters to larger users is made a priority. This includes every category of customers except those for small (one or two family) residential customers. Studies should be undertaken in each vodovod, with external assistance, to determine the status of metering for potentially large water users, and to conduct an estimate of the numbers and costs of required replacement meters, as well as a 20% reserve and a supply of spare parts.

c. Metering of Small Residential Customers Providing meters for small residential dwellings should be established as having a relatively low priority. In the absence of any other measurement (such as basing consumption on the results of a previously operating meter), bills delivered to non-metered residential customers should be estimated on the basis of not less than 150 lpcd, and (in the absence of hard data) an estimated four persons per family. For those customers who strongly contest such estimates, a supply of meters should be made available for installation for a period of not less than six months, and future billings should be estimated on the results of the actual metering.

d. Programs for Monitoring, Periodic Replacement, and Calibration and Repair of Meters Technical assistance should be provided to develop a general program for these areas of strengthening, which should then be tailored to suit the specific needs of each vodovod. Calibration, repair and rebuilding of meters probably would be more economically provided at a few regional centers, rather than trying to establish it at a large number of vodovods. There is already a good private sector capability for this at Zenica. The study should determine how best to expand this capability, with emphasis on doing so as a private sector activity. Monitoring and reporting of non-functioning meters could be improved immediately within existing vodovod capabilities. Removal and replacement programs would depend on the rate at which replacement meters could be made available.

e. Programs for Prompt, Accurate Meter Reading and Transmittal of Reading Results One of the financial recommendations is for more frequent reading of residential meters, from the present schedules which range from quarterly to annually, to a proposed schedule of monthly or bi-monthly readings. Programs should be developed to assist the vodovods in meeting these objectives with minimum impact on staffing levels. These programs also should make recommendations to ensure efficient, prompt and accurate results throughout the entire sequence of meter reading, transfer of readings, and billing of customers.

4. Develop Demand Management and UFW Reduction Programs (Fourth Priority)

Recommendation: Develop a general program for demand management and UFW reduction applicable to current conditions in the country's vodovods. Implementation to be undertaken by individual vodovods, with assistance to the vodovods as appropriate.

a. Definition of Demand Management and UFW Demand management is a series of procedures or actions to assist the vodovod in reducing consumption and waste. The difference between the amount of water produced and the amount it can account for is referred to as unaccounted-for-water (UFW). Reasonable levels of demand assume that the utility provides only so much water as its customers need and are willing to pay for. For Bosnia and Herzegovina, a UFW level of 30% is believed to be a reasonable, achievable intermediate goal for most vodovods. Reducing UFW below that level would indicate excellent management.

b. Components of Demand Management and UFW Reduction Programs Typical components of demand management and UFW reduction programs include: (1) reliable metering of both sources and customers, (2) assignment of responsibility and resources to locate illegal connections and either convert or eliminate them, (3) assignment of responsibility and resources for location and repair of as many system leaks as possible, (4) assignment of responsibility and resources for eliminating "administrative" losses, the tampering of the process of meter readings and or billings by dishonest employees within the utility for personal gain, (5) the establishment of step tariffs to make water more expensive as the amount of usage increases, (6) the implementation of water conservation programs, and (7) such other activities as may be appropriate in particular situations.

c. Benefits of Demand Management Clearly it costs money to produce water, in terms of chemicals, energy, the capital cost of providing the capacity of pipelines, reservoirs, pump stations and treatment works, and the staff to maintain them. Water conserved frequently means that capital costs for expansion works to meet the demands of uncontrolled water use can be deferred. Water not wasted in buildings means reduced loads on wastewater systems, and similar savings in operating costs or deferred capital expenditures.

5. Develop and Implement an Effective Accounting System (Fifth Priority)

Recommendation: Develop a model for and adopt a standard uniform chart of accounts to be used by all vodovods. Tailor the model accounting system for selected vodovods, and assist them in its implementation.

A uniform chart of accounts for water and wastewater utilities can consist of a single chart of accounts with totally separate accounts for the water function and the wastewater function. As an alternative, two separate uniform charts of accounts could be established, one each for the water function and the wastewater function. The chart of accounts can be adapted from international accounting organizations that have established accounts for water and wastewater, or from the uniform chart of accounts established by the National Association of Regulatory Utilities Commissioners (NARUC), a US organization, or a European counterpart organization

6. Develop and Implement an Effective Budgeting System (Sixth Priority)

Recommendation: Establish a model budgeting process based on departmental functions and responsibilities. The model should provide for budget development, reporting, and tracking policies and procedures. Implement the process in selected vodovods so that the budgeting process can be adapted to their needs and integrated into computer based accounting systems.

Develop budgets by major department (financial, water sources, distribution) and require that budgeted costs be reconciled to actual costs at least quarterly. This will provide management with a tool that will track the vodovods' ability to keep within estimated expenditure limits and maintain an adequate revenue stream. Reporting by department will place the responsibility for meeting budget estimates with the head of each department. In most cases, if the department head receives timely reports, this will help the managing director to track expenditures and take any corrective actions that are necessary. The department heads should prepare a quarterly explanation for significant variances from budgeted line items. Management should approve these reports and present them to the vodovod Board of Directors for their approval and incorporation into the Board minutes.

7. Eliminate or Reduce Current Tax Burdens on the Vodovods (Seventh Priority)

Recommendation: Pass legislation to eliminate or significantly reduce the magnitude of the taxes charged and the method of applying them, so as to achieve a more equitable system. In principle, a public utility providing such a life-dependent service as water supply should not be taxed. The donor community should assist in making this case strongly to the government. As a minimum, however, the FBiH and RS should change the basis of taxes applied to collected revenue as opposed to billed revenue. The magnitudes of the protection and abstraction fees or taxes should also be reduced to levels of KM 0.01 per m3 each. The Federation tax of 10% on revenues should be deleted, since the RS has no such tax, or at least reduced to 5% as an interim step to dropping it entirely.

8. Establish More Realistic Tariff Rates (Eighth Priority)

Recommendation: Develop a tariff model, and implement higher and more realistic charges for water and wastewater. Develop a model for general use by all vodovods, and modify and implement specific tariff schedules for selected vodovods. Develop a program to require governmental agencies to subsidize those unable to pay for water or wastewater services.

a. Basic Tariff Rate Structure Where meters are available and functioning, the rate structure should have two components: a customer or fixed charge; and (2) a volume related charge. The customer charge can be a lump sum or can vary based on the size of the meter or type of service. The volume rate probably should provide for higher unit charges as volume increases. Where there are no meters, or no functioning meters, bills should be based on
(1) recent bills during periods the meters functioned, or (2) for residential customers, assumed consumption of 150 lpcd and four persons per household. The tariff should incorporate charges for ancillary water and wastewater services provided to customers, such as (1) fire protection charges, (2) office service charges (late payment fees, collection fees), (3) connection and system development fees; and (4) field service charges (turn-off/turn-on, meter test).

b. Obtain Government Support for Low or Fixed Income Families Establish a policy, with donor assistance, that lifeline or subsidized rates be set for low or fixed income customers. Reimbursement for these low rates should be provided by the municipal, canton or Federation/RS governments. This will improve payments by charging amounts that the customer can afford, and allowing recovery of the subsidized rates from those who have the responsibility for providing this needed social benefit. The lower rates for this new class of customers should be part of the proposed new tariff structures to be recommended for all vodovods.

9. Address Year 2000 Problems (Eighth Priority)

Recommendation: Take action to avoid Year 2K problems. As the end of the year is so close, affected vodovods should take immediate steps, including engaging private sector expertise, to address this problem.

The vodovods Srbac, Tuzla and Banja Luka face almost certain Year 2K problems because of the age and type of their computer systems. There may be others with similar problems, and an assessment should be conducted to determine the extent of the problem in order to avoid the loss of customer records and interruption of billing and accounting functions.

10. Broad-Based Recommendations for Sector Strengthening

a. Develop a New Sector Support Organization Several vodovods have developed useful practices that could be used by other vodovods, but there is no formal means of exchanging such information. Similarly, the vodovods might be in a stronger position to overcome common problems if they could speak with a united voice. A study should be undertaken to make recommendations for establishing a sector support organization such as currently exist in the US and European countries.

b. Conduct Studies of Income and Expenditures and Ability/Willingness to Pay Many officials believe that most people are too poor to pay for water and wastewater services, so prices should be kept low and people should not be pressed for payment. The availability of income/expenditures and ability/willingness to pay studies can provide data where none now exist, so such studies should be undertaken.

c. Prepare a Program for Improved Water Quality Testing The report concluded that water quality testing is unfocused, unregulated, of doubtful reliability. In addition, unsatisfactory test results appear to have no effect on how the utilities operate their works. A specialist knowledgeable about the entire process of water quality regulation, testing and implementation should be engaged to provide specific guidance in this matter, basing recommendations on regulations and standards suitable for Europe.

d. Increase Private Sector Participation A program should be developed to (1) identify those elements of the vodovods activities most likely to benefit from private sector participation, (2) prepare draft contracts for the provision of such services, and (3) prepare guidelines for the selection, payment and monitoring of any services contracted to the private sector.

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APPENDICES

LIST OF ACRONYMS

AWWA -American Water Works Association

Bosnia - Government of Bosnia and Herzegovina

DIN – Deutsche Industrie Norm (German Industrial Standards)

Entity – The two highly autonomous divisions of Bosnia, FBiH and RS

EU - European Union

FBiH - The Federation of Bosnia and Herzegovina, an autonomous Entity of Bosnia

GIS - Geographical Information System

GoBiH - Government of Bosnia and Herzegovina

Government - Government of Bosnia and Herzegovina

HEIS - Hydro-Engineering Institute Sarajevo

IAS - International Accounting Standards

IASC - International Accounting Standards Committee

IFAC - International Federation of Accountants

km - kilometer

KM - convertible marks (currency in GoBiH); approximately $1.00 = KM 1.75

l/sec - liters per second

lpcd - liters per capita per day

m3 or M^3 - cubic meter

mg/l - milligrams per liter

MIS - Management Information System

NARUC - National Association of Regulatory Utiilities Commissioners

OHR - Office of the High Representative (A United Nations function)

pH- relative acidity/alkalinity

PSP - Private Sector Participation

RBB - River Basin Boards and/or River Basin Bodies

RS - Republika Srpska (an autonomous entity of Bosnia)

SR - Socialist Republic (Former description of Bosnia when a part of Yugoslavia)

UFW – Unaccounted-for-Water

USAID - United States Agency for International Development

WTP - water treatment plant

Y2K or Year 2K- Year 2000